Virginia Department of Environmental Quality
Hazardous Waste Program
Hazardous Waste Identification of Methamphetamine Production Process By-Products

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Purpose

The purpose of this document is to provide compliance assistance to homeowners, contactors, State and local officials, law enforcement personnel and others in Virginia that generate and/or manage by-products and wastes associated with clandestine or illegal methamphetamine (meth) labs and information on how those discarded materials may be managed to meet applicable requirements of the Virginia Hazardous Waste Management Regulations (VHWMR).

This information is provided for compliance assistance purposes only by the Virginia Department of Environmental Quality (DEQ). This is not a regulation and, therefore, does not add, eliminate, or change any existing regulatory requirements. The statements in this document are intended for informational purposes only.

Introduction

The operation and cleanup of an illegal meth lab may result in a myriad of materials that must be characterized and disposed of properly. Such materials can include containers of chemicals to be used in the production process, by-products of the production process, as well as lab equipment and apparatus. In addition, contaminated building materials such as wallboard, insulation, carpets, furnishings, and appliances may also require disposal. Further contaminated materials may be generated in the form of soil and/or groundwater from the improper disposal of meth lab by-products or wastes by the producers of the meth. Meth lab wastes may have been poured into the indoor plumbing drains that flow to individual sewage treatment systems (e.g., septic systems) on the property, or allowed to drain directly onto the soil near the meth lab. Contaminated soils and groundwater could also result from the burning or burial of meth lab wastes on the property.

Waste Disposal - Virginia Governing Regulatory Authorities under DEQ

Disposal of hazardous waste is regulated under the VHWMR, through adoption of the Federal Resource Conservation and Recovery Act, Subtitle C, by reference. The general provisions of the regulations require generator responsibility for "cradle-to-grave" management of their hazardous waste.

Although certain *hazardous materials* may be involved in the operation and waste by-products of meth labs, hazardous wastes are a subset of solid wastes that are defined by the regulations in 40 CFR Part 261. Even though a material may be considered a "hazmat," it does not necessarily follow that it is regulated as a hazardous waste.

Additionally, some wastes may be exempted from more restrictive regulation and management as hazardous waste through definitions and exclusions under 40 CFR Part 261. This may include materials disposed of through a POTW (in accordance with specified regulatory provisions), household hazardous wastes, and discarded materials that are not a listed hazardous waste or do not exhibit a characteristic of a hazardous waste even though they may be a "hazmat" or are derived from such materials. Under Virginia's regulations, however, a waste generator may voluntarily declare *any* of his waste to be a

hazardous waste. Doing so will require management in accordance with all applicable regulations. Bulk materials collected from illicit meth labs in Drug Enforcement Agency (DEA) operations are often managed as hazardous waste by disposal contractors under DEA contract.

If materials are not regulated as a hazardous waste, then their disposal or other management is regulated under the Virginia Solid Waste Management Regulations (VSWMR) and possibly the Virginia Regulated Medical Waste Regulations if they contain blood or other body fluids. Certain wastes from meth labs may also require management under DEA protocols for controlled substances destruction.

Hazardous Waste Disposal Considerations

The determination of whether or not a particular waste is a hazardous waste is a multi-step process that depends on a number of factors, including the chemical characteristics and the composition of the waste. The first step is to determine whether the waste in question is a solid waste as defined under the regulations. This determination is made at the point at which the waste is initially generated. Under the hazardous waste regulations, a solid waste is defined as any material, not specifically excluded from the definition of solid waste, which is discarded (i.e., abandoned, recycled in certain ways, or certain waste-like munitions). In the case of meth production, any chemical substance and equipment confiscated at the site is considered "abandoned," and considered a solid waste under the VHWMR.

The generator of the solid waste must then determine if such waste meets the regulatory definition of a hazardous waste. For illegal meth labs, because the generator has abandoned the waste, the Hazmat Team or others responsible for site clean-up would make this determination. The VHWMR define which solid wastes are hazardous wastes. In general a solid waste is a hazardous waste if: (1) it is or contains a listed hazardous waste; or (2) it exhibits one or more of the hazardous waste characteristics. Either testing or knowledge of the waste may be used to make this determination.

It is generally not possible to make a blanket statement as to whether a waste would be defined as hazardous without knowing specific details about its generation. This may be particularly true for wastes generated at meth labs because there are many variations in the production methods and materials used. However, it is possible to identify many meth lab wastes that are likely to meet the definition of hazardous waste under the hazardous waste regulations.

Because the methamphetamine production process is not one of the specific industries whose wastes are identified in the K list, meth lab wastes, if a listed hazardous waste, would be listed as hazardous either as an F list hazardous waste or a P or U list hazardous waste. For example, many solvents used in meth production processes may result in some of these wastes identified as F001 – F005 hazardous wastes. It is also possible that some of the reagent chemicals used in the meth production process might be listed on the P and U lists of commercial chemical products and manufacturing chemical intermediates.

It also is likely that many of the wastes that are generated during the meth production process exhibit one or more of the hazardous characteristics. For example, many meth labs are identified as a result of

an explosion, demonstrating quite clearly the "ignitability" or "reactivity" characteristic (Hazardous Waste Code D001 or D003). Because the hazardous characteristics address properties of the wastes, whether meth lab waste will exhibit a hazardous characteristics will likely vary. For example, a pure solvent may have a low flash point and be classified as ignitable-D001. If mixed with other wastes, the ignitability of the mixture may be different and the waste may no longer be considered ignitable-D001; however, it may still meet the narrative definition of "reactivity."

The tables in Appendix I, modified from a table contained in the DEA "Guidelines for the Cleanup of Clandestine Drug Laboratories," identify hazardous waste codes that may apply to various wastes found in meth production laboratories. However, in some cases it may be the position of the agency or clean-up contractor to unilaterally *declare* the materials as regulated hazardous waste and manage them accordingly. In either case, DEQ's Regional Offices can provide Provisional EPA ID numbers to response entities to facilitate shipment to a hazardous waste management facility for disposal (see below for further information on provisional EPA ID numbers.). Because Virginia does not currently have a permitted hazardous waste management disposal facility in state, wastes will have to be sent to a disposal facility out-of-state. Local authorities and contractors disposing of regulated hazardous wastes should check with the receiving state to see if there are any special state provisions for these materials.

Provisional EPA ID numbers

Virginia provides Provisional EPA ID Numbers to generators in cases where a site does not hold a permanent ID number but has a need to dispose of hazardous waste due to some unusual circumstance, in cases when an emergency situation arises necessitating expedient management of a hazardous waste, or in cases where the waste generation activity will only be temporary and of short duration, such as a specific job or contract activity.

If management of illegal meth lab waste involves disposal of materials regulated or declared as hazardous wastes, a Provisional EPA ID number may be required by your hazardous waste disposal contractor. Provisional numbers allow a mechanism for generators to meet the EPA ID Number / Notification requirement for manifesting hazardous waste to a destinated treatment/disposal facility. DEQ's Regional Offices can issue numbers verbally, as necessary, to expedite shipments.

For DEQ Regional Office contacts and further information regarding provisional EPA ID numbers, please see the reference entitled "Issuance of Provisional EPA ID Numbers"

Samples Management

Under 40 CFR Part 261.4 (d) (1), which Virginia has incorporated by reference, samples collected solely for the purpose of testing are conditionally exempt from the regulations for hazardous waste management. Samples will maintain their exemption as long they meet the conditions of 40 CFR 261.4 (d) (1) (i - vi) :
(i) The sample is being transported to a laboratory for the purpose of testing; or
(ii) The sample is being transported back to the collector after testing; or

(iii) The sample is being stored by the sample collector before transport to a laboratory for testing; or
(iv) The sample is being stored in a laboratory before testing; or
(v) The sample is being stored in a laboratory after testing but before it is returned to the sample collector; or
(vi) The sample is being stored temporarily in the laboratory after testing for a specific purpose (for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary).

Note: In order to qualify for the above exemption, the sample collector and the laboratory must comply with applicable shipping requirements per 40 CFR 261.4(d)(2).

Once samples no longer meet the conditions of the exclusion and are to be discarded, they become a "solid waste" and may be subject to regulation as a hazardous waste. Responsibility for samples that are no longer of interest may either be assigned to the laboratory or they may be returned to the original sample collector. If the laboratory returns the samples to the collector, they continue to be excluded from regulation until remanded to the original collector. A procedural agreement should be established between the laboratory and sample collector.

Based on sample analysis and evaluation for hazardous waste characteristics or listing applicability, the party responsible for the sample collection/disposal may become a "generator" of hazardous waste. They will be responsible for disposal of the samples in accordance with the hazardous waste management requirements. (See RO12438.)

If samples are declared as hazardous waste by the generator, or are otherwise determined to be hazardous waste due to analytical information, the generator has the following management options:

- Disposal through a hazardous waste disposal contractor, which is recommended if any extremely hazardous materials are part of the included waste (e.g. highly reactive materials unsuitable for landfill or POTW disposal, like metallic sodium);
- Disposal through cooperation with the local POTW, for certain materials (e.g. acids and bases, see Other Waste Disposal Considerations below); or
- Management as controlled substances for some materials or reactant products in accordance with DEA protocols.

If the total quantity of samples is less than 100 kg, the generator is considered a Conditionally Exempt Small Quantity Generator (CESQG). Most sample disposal (if the discarded samples are managed as hazardous wastes) would be expected to involve only small quantities, thus classifying the generator as a CESQG. Regulatory requirements are minimal in this category. In most cases, the generator may have a contractor handle all of the waste in one container, assuming that there are no material compatibility issues. The generator may also accumulate sample wastes as a CESQG for up to 1 year or until a maximum quantity of 1000 kilograms is accumulated. For further information on CESQG requirements, see the document entitled "Synopsis of Requirements for Conditionally Exempt Small Quantity Generators"

Other Waste Disposal Considerations

Certain materials such as mineral acids (hydrochloric, sulfuric, phosphoric, etc.) and bases (anhydrous ammonia, sodium hydroxide), sodium hypochlorite (bleach), and sodium bicarbonate (baking soda) may be managed through cooperative agreement with local Publicly Owned Treatment Works (POTWs). These materials are similar to items already used in wastewater treatment processes.

Sample vials returned from the laboratory to local authorities may be collected and stored at their facilities under CESQG regulations as long the quantity does not exceed 1000kg and they are not stored for longer than 1 year. The CESQG regulations do not establish specific storage criteria, but samples should be stored in accordance with applicable OSHA and fire codes. Incompatible materials should also be kept separated. An industrial flammables storage cabinet would be appropriate for most sample storage.

Wastes that are not classified as a hazardous waste may be managed at permitted solid waste landfills. Some landfills may require them to be managed as a "special waste" depending on the nature and quantity of the chemical contaminants. See the document entitled "Solid Waste Special Waste Disposal Requests" for more information. In some instances, the type and quantity of materials involved in illicit lab wastes, particularly when dealing with only discarded samples or property renovation activities, may not differ substantially from common household wastes routinely received at landfills. However, DEQ recommends that any landfill accepting such materials be in compliance with and permitted under the state's RCRA Subtitle D requirements of the VSWMR (liner and leachate collection system in place).

Non-hazardous waste may also be managed at municipal solid waste incinerators or other permitted solid waste incinerators. In general, these materials may not be intentionally open burned as a method of disposal. Both hazardous waste and solid waste regulations have jurisdiction to require permits for open burning of these materials. Please note also that hospital incinerators are not permitted as commercial units and may not accept samples or other types of materials from off-site for disposal. There are several permitted solid waste incinerators located throughout the state; DEQ's Regional Offices can provide specific information about them:

Covanta (2 facilities: Arlington/Alexandria Recovery Facility; I-95 Energy Resource Recovery Facility) – Northern Virginia Regional Office

Wheelabrator Portsmouth, Inc. – Tidewater Regional Office

If materials are contaminated with blood or other fluids, they may be subject to regulation as regulated medical waste (RMW) even if excluded from regulation as hazardous waste. Special requirements apply to management and disposal of RMW. It is recommended that you contact your DEQ Regional Office if you have any wastes involving RMW.

For More Information

Please contact the appropriate DEQ regional staff if you have any questions regarding applicability of these requirements.

Appendix I

Chemical Properties and Hazardous Waste Codes Associated with Chemicals Commonly Found at Clandestine Methamphetamine Laboratory Sites[1]

TABLE I-1: CYANIDES (all in this list potentially meet reactivity characteristic – D003)

Substance	Form	Exposure	EPA Hazardous Waste Code
Sodium Cyanide	Solid	Skin, Eyes, Ingestion	P106
Potassium Cyanide	Solid	Skin, Eyes, Ingestion	P098
Benzyl Cyanide	Liquid	Skin, Eyes, Inhalation, Ingestion	D003, D018
Hydrogen Cyanide	Gas[2], Liquid	Inhalation	P063

TABLE I-2: IRRITANTS AND CORROSIVES

Substance	Form	Exposure	EPA Hazardous Waste Code
Acetic Acid	Liquid	Skin, Eyes, Inhalation	D001[3]
Acetic Anhydride	Liquid	Skin, Eyes, Inhalation	D001
Acetyl Chloride	Liquid	Skin, Eyes, Inhalation	U006
Ammonium Hydroxide	Liquid	Skin, Eyes, Inhalation	D002
Benzyl Chloride	Liquid	Skin, Eyes, Inhalation	P028, D018
Dimethylsulfate	Liquid	Skin, Eyes, Inhalation	U103, D003
Formaldehyde	Gas, Liquid	Skin, Eyes, Inhalation	U122
Formic Acid	Liquid	Skin, Eyes, Inhalation	U123, D001[4]
Hydrogen Chloride/Hydrochloric Acid	Gas, Liquid	Skin, Eyes, Inhalation	D002[5]
Hydrobromic Acid	Liquid	Skin, Eyes, Inhalation	D003
Hydroiodic Acid	Liquid	Skin, Eyes, Inhalation	D002
Hydroxylamine	Liquid, Solid	Skin, Eyes, Inhalation	D003

[1] From EPA "Report to Congress Under the USA PATRIOT Improvement and Reauthorization Act of 2005, RCRA Hazardous Waste Identification of Methamphetamine Production Process By-Products", September 26, 2008. http://www.epa.gov/osw/hazard/wastetypes/wasteid/downloads/rtc-meth.pdf.

[2] Ignitable contained gases intended for discard are regulated under RCRA.

[3] Ignitable at high concentrations (e.g. 96%).

[4] Only liquids can be classified as D002. Solids and gases cannot be classified as D002, even if they are corrosive. Refer to 40 CFR 261.33 for a detailed definition.

[5] Water or aqueous solutions would be D002.

TABLE I-2: IRRITANTS AND CORROSIVES (continued)

Substance	Form	Exposure	EPA Hazardous Waste Code
Methylamine	Gas, Liquid, Solid	Skin, Eyes, Inhalation	D001
Methylene Chloride (dichloromethane, methylene dichloride)	Liquid	Skin, Eyes, Inhalation	U080
Methyl Methacrylate	Liquid	Skin, Eyes, Ingestion	U162
Nitroethane	Liquid	Skin, Eyes, Ingestion	D001
Oxalyl Chloride	Liquid	Skin, Eyes, Ingestion	D003
Perchloric Acid	Liquid	Skin, Eyes, Ingestion	D001
Phenymagnesium Bromide	Liquid	Skin, Eyes, Ingestion	D001, D003
Phosphine	Gas	Eyes, Inhalation	P096
Phosphorous Oxychloride	Solid	Skin, Eyes, Inhalation	D003
Phosphorous Pentoxide	Solid	Skin, Eyes	D003
Sodium Amide (Sodamide)	Solid	Skin, Eyes, Inhalation	D003
Sodium Metal	Solid	Skin, Eyes	D003
Sodium Hydroxide	Liquid, Solid	Skin, Eyes	D002
Sodium Trioxide	Liquid, Solid	Skin, Eyes, Inhalation	D001, D002, D003
Sulfuric Acid	Liquid	Skin, Eyes, Inhalation	D002
Tetrahydrofuran	Liquid	Skin, Eyes, Inhalation	U213
Thionyl Chloride	Liquid	Skin, Eyes, Inhalation	D003

TABLE I-3: SOLVENTS

Substance	Form	Exposure	EPA Hazardous Waste Code
Acetone	Liquid	Skin, Eyes, Inhalation	U002, D001
Acetonitrile	Liquid	Skin, Eyes, Inhalation	U003, Doo1
Aniline	Liquid	Skin, Eyes, Inhalation	U012
Benzene	Liquid	Skin, Eyes, Inhalation	U019, D018, D001
Benzyl Chloride	Liquid	Skin, Eyes, Inhalation	P028, D018, D00
Carbon Tetrachloride	Liquid	Skin, Eyes, Inhalation	U211, D019
Chloroform	Liquid	Skin, Eyes, Inhalation	U044, D022
Cyclohaxanone	Liquid	Skin, Eyes, Inhalation	U057, D001
Dioxane	Liquid	Skin, Eyes, Inhalation	U108, D001
Ethanol	Liquid	Skin, Eyes, Inhalation	D001

TABLE I-3: SOLVENTS (continued)

Substance	Form	Exposure	EPA Hazardous Waste Code
Ethyl Acetate	Liquid	Skin, Eyes, Inhalation	U112, D001
Ethyl Ether	Liquid	Skin, Eyes, Inhalation	U117, D001, D003
Freon 11 (trichloromonofluoro - methane)	Liquid	Skin, Eyes, Inhalation	U121
Hexane	Liquid	Skin, Eyes, Inhalation	D001
Isopropanol	Liquid	Skin, Eyes, Inhalation	D001
Methanol	Liquid	Skin, Eyes, Inhalation	U154, D001
Methylene Chloride (dichloromethane, methylene dichloride)	Liquid	Skin, Eyes, Inhalation	U080
Petroleum Ether	Liquid	Skin, Eyes, Inhalation	D001
Pyridine	Liquid	Skin, Eyes, Inhalation	U196, D001
Toluene	Liquid	Skin, Eyes, Inhalation	U220, D001
o-Toluidine	Liquid	Skin, Eyes, Inhalation	U328, D001

TABLE I-4: METALS/SALTS

Substance	Form	Exposure	EPA Hazardous Waste Code
Magnesium metal	Solid	Skin, Eyes	D003
Red Phosphorus	Solid	Skin, Eyes	D003
Mercuric Chloride	Solid	Skin, Eyes	D003, D009
Lead Acetate	Solid	Skin, Eyes	U144, D008
Lithium Aluminum Hydride	Solid	Skin, Eyes	D001, D003
Lithium Hydroxide	Solid	Skin, Eyes	D003
Potassium Hydroxide[6]	Solid	Skin, Eyes	D003
Raney Nickel	Solid	Skin, Eyes	D003
Sodium Hydroxide[7]	Solid	Skin, Eyes	D003
Sodium Metal	Solid in kerosene	Skin, Eyes	D003
Potassium Metal	Solid in kerosene	Skin, Eyes	D003

[6] Water or aqueous solutions would be D002.
[7] Water solutions would be D002.

TABLE I-5: OTHER POTENTIALLY HAZARDOUS PRECURSORS, SOLVENTS, REAGENTS, DRUG PRODUCTS AND BY-PRODUCTS FOUND IN CLANDESTINE DRUG LABORATORIES, WHICH WOULD NOT BE CONSIDERED TO BE HAZARDOUS WASTE UNDER RCRA

Substance	Form	Exposure
Ammonia (anhydrous)	Gas	Skin, Eyes, Inhalation
Aluminum Chloride	Solid	Skin, Eyes
Palladium	Solid	Skin, Eyes
Iodine	Solid	Skin, Eyes
Thorium Salts	Solid	Skin, Eyes
Fentanyl	Solid	Skin, Eyes, Inhalation
Hydrogen	Gas	Inhalation
Lysergic Acid Diethylamide (LSD)	Powder	Ingestion, Inhalation
MPTP, MPPP[8]	Solids	Skin, Inhalation
Methylfentanyl	Solid	Skin, Eyes, Inhalation
Phenylacetic Acid	Solid	Skin, Eyes
Phenyl-2-Propane (phenylacetone)	Liquid	Skin, Inhalation
Piperidine	Liquid	Skin, Inhalation

[8] MPTP (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine); MPPP (1-methyl-4-phenyl-4-propionoxypiperidine).